

=> d hist

(FILE 'HOME' ENTERED AT 12:06:10 ON 27 FEB 2002)

FILE 'REGISTRY' ENTERED AT 12:07:19 ON 27 FEB 2002  
E POLYBIPHENYLANILINE/CN  
E (POLY)BIPHENYLANILINE/CN  
E BIPHENYLANILINE/CN

L1 FILE 'CAPLUS' ENTERED AT 12:11:35 ON 27 FEB 2002  
1 S POLYBIPHENYLANILINE

L2 FILE 'REGISTRY' ENTERED AT 12:15:20 ON 27 FEB 2002  
1 S 31545-82-1/RN  
SET NOTICE 1 DISPLAY  
SET NOTICE LOGIN DISPLAY

L3 FILE 'USPATFULL' ENTERED AT 12:18:07 ON 27 FEB 2002  
0 S 31545-82-1

=> d ibib ab it hitstr

L1 ANSWER 1 OF 1 CAPLUS COPYRIGHT 2002 ACS  
ACCESSION NUMBER: 2000:705482 CAPLUS  
DOCUMENT NUMBER: 133:298753  
TITLE: Electrodes and batteries  
INVENTOR(S): Harada, Manabu; Nishiyama, Toshihiko; Fujiwara,  
Masaki; Okada, Shinako; Kurosaki, Masato  
PATENT ASSIGNEE(S): Nec Corp., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000277118	A2	20001006	JP 1999-76573	19990319
JP 3183280	B2	20010709		

AB The electrodes use active mass contg. **polybiphenylaniline**.  
derivs. The derivs. are I, where R = H, halogen, OH, carboxy, sulfone,  
sulfuric acid, nitro, cyano, alkyl, aryl, alkoxy, aryloxy, amino,  
alkylthio, arylthio, or heterocyclic groups and may be different from each  
other. The batteries use the above electrodes as cathodes.

IT Battery cathodes  
(cathodes from **polybiphenylaniline** derivs. for batteries)

IT 31545-82-1D, Poly(imino[1,1'-biphenyl]-4,4'-diyl), derivs.  
RL: DEV (Device component use); USES (Uses)  
(cathodes from **polybiphenylaniline** derivs. for batteries)

L2 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2002 ACS

RN 31545-82-1 REGISTRY

CN Poly(imino[1,1'-biphenyl]-4,4'-diyl) (9CI) (CA INDEX NAME)

OTHER CA INDEX NAMES:

CN Poly(imino-4,4'-biphenylene) (8CI)

OTHER NAMES:

CN Bis(4-bromophenyl)amine homopolymer, sru

L9 ANSWER 6 OF 10 CAPLUS COPYRIGHT 2001 ACS

ACCESSION NUMBER: 1999:143013 CAPLUS

DOCUMENT NUMBER: 130:252746

TITLE: Preparation of soluble **poly**(iminoarylene)s by palladium-catalyzed **polycondensation** of aryl dibromides with aryl primary diamines

AUTHOR(S): Kanbara, Takaki; Nakadani, Yoshiko; Hasegawa, Kiyoshi  
CORPORATE SOURCE: Department of Chemical and Biochemical Engineering, Faculty of Engineering, Toyama University, Toyama, 930-8555, Japan

SOURCE: Polym. J. (Tokyo) (1999), 31(2), 206-209

CODEN: POLJB8; ISSN: 0032-3896

PUBLISHER: Society of Polymer Science, Japan

DOCUMENT TYPE: Journal

LANGUAGE: English

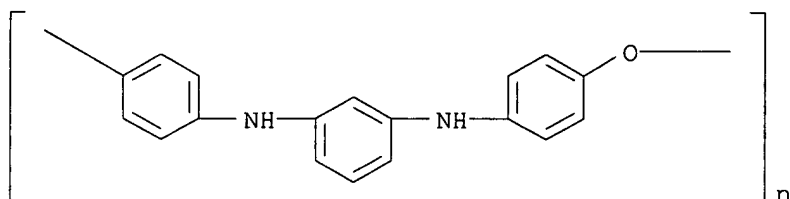
TI Preparation of soluble **poly**(iminoarylene)s by palladium-catalyzed **polycondensation** of aryl dibromides with aryl primary diamines

AB A catalyst based on tris(dibenzylideneacetone)dipalladium and 2,2'-bis(diphenylphosphino)-1,1'-binaphthyl was used for the **polycondensation** of m-phenylene dibromide, 4,4'-dibromodiphenyl oxide, 2,6-dibromopyridine, or 3,5-dibromopyridine, with arom. or heterocyclic diamines to give arom. **polyamines**.

IT **221685-68-3P**, 1,3-Dibromobenzene-4,4'-oxydianiline copolymer, SRU  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(prepn. of arom. **polyamines** in presence of palladium catalyst)

RN 221685-68-3 CAPLUS

CN Poly(oxy-1,4-phenyleneimino-1,3-phenyleneimino-1,4-phenylene) (9CI) (CA INDEX NAME)



REFERENCE COUNT: 31

REFERENCE(S): (1) Driver, M; J Am Chem Soc 1997, V119, P8232 CAPLUS  
(2) Goodson, F; Macromolecules 1998, V31, P1700

CAPLUS

(3) Goto, H; Synth Met 1997, V85, P1683 CAPLUS

(4) Guram, A; Angew Chem Int Ed Engl 1995, V34, P1348  
CAPLUS

(5) Hartwig, J; J Am Chem Soc 1996, V118, P3626

CAPLUS

ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9 ANSWER 7 OF 10 CAPLUS COPYRIGHT 2001 ACS

ACCESSION NUMBER: 1998:735408 CAPLUS

DOCUMENT NUMBER: 130:45210

TITLE: Silver halide photographic material using gelatin-compatible **polymer** as high contrast-promoting agent

INVENTOR(S): Furukawa, Akira; Mitsui, Shinobu

PATENT ASSIGNEE(S): Mitsubishi Paper Mills, Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 15 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1

=> d hist

(FILE 'HOME' ENTERED AT 15:41:24 ON 27 FEB 2002)

FILE 'REGISTRY' ENTERED AT 15:43:43 ON 27 FEB 2002

E POLYDIPHENYLAMINE/CN  
E POLY. DIPHENYLAMINE/CN  
E DIPHENYL AMINE/CN  
E DIPHENYLAMINE/CN

L1 1 S E19

FILE 'USPATFULL, CAPLUS' ENTERED AT 15:52:30 ON 27 FEB 2002

L2 73 S L1

L3 43 S L2 AND (CONDUCT#### OR CATHODE OR BATTER###)

L4 19 S L2 AND (BATTER### OR ELECTRODE#)

=> d ibib ab hitstr it 1-

YOU HAVE REQUESTED DATA FROM 19 ANSWERS - CONTINUE? Y/(N):y

L4 ANSWER 1 OF 19 USPATFULL

ACCESSION NUMBER: 1999:156655 USPATFULL

TITLE: Electrochromic display device

INVENTOR(S): Chandrasekhar, Prasanna, Freehold, NJ, United States

PATENT ASSIGNEE(S): Ashwin-Ushas Corporation, Freehold, NJ, United States  
(U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 5995273		19991130
APPLICATION INFO.:	US 1998-30170		19980225 (9)
DOCUMENT TYPE:	Utility		
FILE SEGMENT:	Granted		
PRIMARY EXAMINER:	Epps, Georgia		
ASSISTANT EXAMINER:	Burke, Margaret		
LEGAL REPRESENTATIVE:	Seidel, Gonda, Lavorgna & Monaco, PC		
NUMBER OF CLAIMS:	21		
EXEMPLARY CLAIM:	1		
NUMBER OF DRAWINGS:	38 Drawing Figure(s); 37 Drawing Page(s)		
LINE COUNT:	1438		

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB An electrochromic device is provided having an electrochromic conducting polymer layer in contact with a flexible outer layer. A conductive reflective layer is disposed between the electrochromic conducting polymer and a substrate layer. A liquid or solid electrolyte contacts the conductive reflective layer and a counter electrode in the device. A liquid electrolyte may comprise, for example, a mixture of sulfuric acid, poly(vinyl sulfate), and poly(anethosulfonate). A solid electrolyte may comprise, for example, a mixture of sulfuric acid, poly(vinyl sulfate), poly(anethosulfonate), and poly(vinyl alcohol). The electrochromic conducting polymer layer may comprise, for example, poly(diphenyl amine), poly(4-amino biphenyl), poly(aniline),

poly(3-alkyl thiophene), poly(phenylene), poly(phenylene vinylene), poly(alkylene vinylenes), poly(amino quinolines), or poly(diphenyl benzidine) and one or more dopants such as poly(styrene sulfonate), poly(anethosulfonate), poly(vinyl sulfate), p-toluene sulfonate, trifluoromethane sulfonate, and poly(vinyl stearate).

IT 25656-57-9, Poly(diphenylamine)  
(electrochromic display devices with conductive layers of)

RN 25656-57-9 USPATFULL

CN Benzenamine, N-phenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 122-39-4

CMF C12 H11 N

Ph-NH-Ph

IT Electrochromic devices

IT Electrochromic imaging devices  
(contg. conductive arom. polymers)

IT Polyanilines  
(electrochromic display devices with conductive layers of)

IT Polyoxyalkylenes, uses  
(electrochromic display devices with electrolytes contg.)

IT Fluoropolymers, uses

IT Polyesters, uses  
(electrochromic display devices with substrates of)

IT 9033-83-4, Poly(phenylene) 25233-30-1, Poly(aniline) 25656-57-9  
, Poly(diphenylamine) 84928-92-7, Poly(3-methylthiophene) 96638-49-2,  
Poly(phenylene vinylene) 102272-00-4 116267-93-7,  
Poly(4-aminobiphenyl) 117051-73-7, Poly(diphenylbenzidine)  
(electrochromic display devices with conductive layers of)

IT 9003-95-6, Poly(vinyl stearate) 25317-44-6, 3-Hydroxy-4-[2-sulfo-4-(4-sulfophenylazo)phenylazo]-2,7-naphthalenesulfonic acid  
(electrochromic display devices with conductive polymer layers contg.)

IT 104-15-4, uses 7664-93-9, Sulfuric acid, uses 9002-89-5, Poly(vinyl alcohol) 25322-68-3, Poly(ethylene oxide) 26837-42-3, Potassium poly(vinyl sulfate) 37181-39-8, Trifluoromethane sulfonate  
(electrochromic display devices with electrolytes contg.)

IT 9002-86-2, Poly(vinyl chloride) 9002-88-4, Polyethylene 9003-07-0, Polypropylene 9003-42-3, Poly(ethyl methacrylate) 9010-79-1D, Ethylene-propylene copolymer, fluorinated 9011-14-7, Poly(methyl methacrylate) 24968-79-4, Acrylonitrile-methyl acrylate copolymer  
(electrochromic display devices with layers of)

IT 24937-79-9, Poly(vinylidene fluoride) 25038-59-9, Poly(ethylene terephthalate), uses  
(electrochromic display devices with substrates of)

ACCESSION NUMBER: 2001:271989 CAPLUS  
DOCUMENT NUMBER: 135:99753  
TITLE: Wide band electrochromic displays based on thin  
conducting polymer films  
AUTHOR(S): Pages, H.; Topart, P.; Lemordant, D.  
CORPORATE SOURCE: DMAT/SCMF, Commissariat a l'Energie Atomique, Le  
Ripault, Monts, 37260, Fr.  
SOURCE: Electrochim. Acta (2001), 46(13-14), 2137-2143  
CODEN: ELCAAV; ISSN: 0013-4686  
PUBLISHER: Elsevier Science Ltd.  
DOCUMENT TYPE: Journal  
LANGUAGE: English

AB New, wide band, flexible electrochromic displays have been realized with microporous membranes metalized with gold that acts both as an **electrode** and a reflecting layer. A control of the relative contribution of specular and diffuse reflectance to the optical response of displays can be achieved by varying the size of pores in the membrane. The active layer is a thin conducting polymer layer electrochem. deposited on the metalized membrane. Polydiphenylamine and poly(3,4-ethylenedioxythiophene), which show good electrochem. and optical properties, were used as active layers. These devices exhibit great contrast in the visible/near-IR spectral region with high reflectance in their reflecting state. IR reflectance measurements showed that swelling can induce reversible wide band contrast in mid-IR and far-IR. These results were correlated to morphol. changes induced by ions movements in the polymer films by using EQCM measurements with fast simultaneous acquisition of frequency and impedance.

IT 25656-57-9, Polydiphenylamine

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(flexible wide band electrochromic displays based on gold metalized microporous membranes and conductive polymer films as active layers)

RN 25656-57-9 CAPLUS

CN Benzenamine, N-phenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 122-39-4

CMF C12 H11 N

Ph-NH-Ph

IT Reflection spectra

(UV-visible; flexible wide band electrochromic displays based on gold metalized microporous membranes and conductive polymer films as active layers)

IT UV and visible spectra

(absorption; flexible wide band electrochromic displays based on gold metalized microporous membranes and conductive polymer films as active



- layers)
- IT Absorption spectra  
Electrochromic imaging devices  
IR reflectance spectra  
(flexible wide band electrochromic displays based on gold metalized microporous membranes and conductive polymer films as active layers)
- IT Polyamines  
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
(flexible wide band electrochromic displays based on gold metalized microporous membranes and conductive polymer films as active layers)
- IT Polyesters, processes  
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
(membrane; flexible wide band electrochromic displays based on gold metalized microporous membranes and conductive polymer films as active layers)
- IT UV and visible spectra  
(reflection; flexible wide band electrochromic displays based on gold metalized microporous membranes and conductive polymer films as active layers)
- IT 7732-18-5, Water, processes 7791-03-9, Lithium perchlorate  
155812-81-0, Lithium trifluoromethanesulfonamide  
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
(electrolyte; flexible wide band electrochromic displays based on gold metalized microporous membranes and conductive polymer films as active layers)
- IT 126213-51-2, Poly(3,4-ethylenedioxythiophene)  
RL: DEV (Device component use); USES (Uses)  
(flexible wide band electrochromic displays based on gold metalized microporous membranes and conductive polymer films as active layers)
- IT 733-44-8, Tetraethylammonium tosylate 7440-57-5, Gold, processes  
25656-57-9, Polydiphenylamine 27119-07-9, Poly(2-acrylamido-2-methyl-1-propanesulfonic acid)  
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
(flexible wide band electrochromic displays based on gold metalized microporous membranes and conductive polymer films as active layers)
- REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 3 OF 19 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2000:847688 CAPLUS

DOCUMENT NUMBER: 134:90761

TITLE: Polydiphenylamine-dodecyl sulfate films for the simultaneous amperometric determination of electroinactive anions and cations in ion-exclusion cation-exchange chromatography

AUTHOR(S): Xu, Qun; Xu, Chun; Wang, Yanping; Zhang, Wen; Jin, Litong; Tanaka, Kazuhiko; Haraguchi, Hiroki; Itoh,

Akihide  
CORPORATE SOURCE: Dept. of Chem., East China Normal University,  
Shanghai, 200062, Peop. Rep. China  
SOURCE: Fresenius' J. Anal. Chem. (2000), 368(8), 791-796  
CODEN: FJACES; ISSN: 0937-0633  
PUBLISHER: Springer-Verlag  
DOCUMENT TYPE: Journal  
LANGUAGE: English

AB An amperometric detector with 2 working electrodes both modified with polydiphenylamine-dodecyl sulfate (PDPA-DS) was successfully used for the simultaneous detn. of electroinactive anions (SO<sub>4</sub><sup>2-</sup>, Cl<sup>-</sup>, NO<sub>3</sub><sup>-</sup>) and cations (Na<sup>+</sup>, NH<sub>4</sub><sup>+</sup> and K<sup>+</sup>) in single-column ion-exclusion cation-exchange chromatog. (IEC-CEC). The PDPA-DS chem. modified electrode (CME) was based on the incorporation of dodecyl sulfate (DS) into PDPA by electropolymn. of diphenylamine in the presence of SDS. The electrochem. responses against the anions and cations at the PDPA-DS CME in differential pulse voltammetry were studied. A set of well-defined peaks of electroinactive anions and cations were obtained. The anions and cations were detected conveniently and reproducibly in a linear concn. range 0.01-5.0 mmol/L and their detection limits were in the range 5-9  $\mu$ mol/L at a signal-to-noise ratio of 3 (S/N = 3). The proposed method was quick, sensitive, and simple and was successfully applied to the anal. of lake water samples. The working electrode was stable over 1 wk period of operation with no evidence of chem. and mech. deterioration.

IT 25656-57-9D. Polydiphenylamine, dodecyl sulfate-modified  
RL: ARU (Analytical role, unclassified); NUU (Other use, unclassified); ANST (Analytical study); USES (Uses)  
(polydiphenylamine-dodecyl sulfate films for simultaneous amperometric detn. of electroinactive anions and cations in ion-exclusion cation-exchange chromatog.)

RN 25656-57-9 CAPLUS  
CN Benzenamine, N-phenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 122-39-4  
CMF C12 H11 N

Ph-NH-Ph

IT Electrodes  
(amperometric; polydiphenylamine-dodecyl sulfate films for simultaneous amperometric detn. of electroinactive anions and cations in ion-exclusion cation-exchange chromatog.)

IT Anions  
Cation exchange chromatography  
Cations  
Film electrodes  
Ion exclusion chromatography

Lake waters

(polydiphenylamine-dodecyl sulfate films for simultaneous amperometric detn. of electroinactive anions and cations in ion-exclusion cation-exchange chromatog.)

IT Amperometry

(simultaneous amperometric detn. of electroinactive anions and cations in ion-exclusion cation-exchange chromatog. using polydiphenylamine-dodecyl sulfate film electrodes)

IT 7732-18-5, Water, analysis

RL: AMX (Analytical matrix); ANST (Analytical study)

(polydiphenylamine-dodecyl sulfate films for simultaneous amperometric detn. of electroinactive anions and cations in ion-exclusion cation-exchange chromatog.)

IT 151-41-7D, modified polydiphenylamine 25656-57-9D,

Polydiphenylamine, dodecyl sulfate-modified

RL: ARU (Analytical role, unclassified); NUU (Other use, unclassified);

ANST (Analytical study); USES (Uses)

(polydiphenylamine-dodecyl sulfate films for simultaneous amperometric detn. of electroinactive anions and cations in ion-exclusion cation-exchange chromatog.)

IT 7440-09-7, Potassium, analysis 7440-23-5, Sodium, analysis 14797-55-8, Nitrate, analysis 14798-03-9, Ammonium, analysis 14808-79-8, Sulfate, analysis 16887-00-6, Chloride, analysis

RL: ANT (Analyte); ANST (Analytical study)

(simultaneous amperometric detn. of electroinactive anions and cations in ion-exclusion cation-exchange chromatog. using polydiphenylamine-dodecyl sulfate film electrodes)

REFERENCE COUNT: 30 THERE ARE 30 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 4 OF 19 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2000:683260 CAPLUS

DOCUMENT NUMBER: 133:271234

TITLE: Simultaneous amperometric detection of electroinactive anions and cations in ion chromatography

AUTHOR(S): Xu, Qun; Xu, Chun; Wang, Yanping; Zhang, Wen; Jin, Litong; Tanaka, Kazuhiko; Haraguchi, Hiroki; Itoh, Akihide

CORPORATE SOURCE: Dep. Chem., East China Normal University, Shanghai, 200062, Peop. Rep. China

SOURCE: Analyst (Cambridge, U. K.) (2000), 125(10), 1799-1804  
CODEN: ANALAO; ISSN: 0003-2654

PUBLISHER: Royal Society of Chemistry

DOCUMENT TYPE: Journal

LANGUAGE: English

AB An amperometric detector with 2 working electrodes modified with polydiphenylamine (PDPA) and polydiphenylamine dodecyl sulfate (PDPA-DS) was successfully used for the simultaneous detn. of electroinactive anions (SO<sub>4</sub><sup>2-</sup>, Cl<sup>-</sup>, NO<sub>3</sub><sup>-</sup>) and cations (Na<sup>+</sup>, NH<sub>4</sub><sup>+</sup> and K<sup>+</sup>) in single-column ion exclusion chromatog.-cation exchange chromatog. (IEC-CEC). The PDPA-DS chem. modified electrode (CME) based on the incorporation of

dodecyl sulfate (DS) into PDPA by electropolymn. of diphenylamine (DPA) in the presence of surfactant. The electrochem. responses against the anions and cations in differential pulse voltammetry were studied. A set of well-defined peaks of electroinactive anions and cations were obtained. The RSDs of chromatog. peak height (nA) for anions were all <4.4% and those for cations were all <4.1%. The anions and cations were detected conveniently and reproducibly in the linear concn. range 6.0 .times. 10<sup>-6</sup>-5.0 .times. 10<sup>-3</sup> mol L<sup>-1</sup> and their correlation coeffs. were all >0.990. Their detection limits were investigated using 3.sigma. (where s represents the std. deviation of a blank soln., n = 11). They were 9.86 .times. 10<sup>-7</sup> for SO<sub>4</sub><sup>2-</sup>, 6.92 .times. 10<sup>-7</sup> for Cl<sup>-</sup>, 7.86 .times. 10<sup>-7</sup> for NO<sub>3</sub><sup>-</sup>, 7.86 .times. 10<sup>-7</sup> for Na<sup>+</sup>, 9.79 .times. 10<sup>-7</sup> for NH<sub>4</sub><sup>+</sup>, and 8.94 .times. 10<sup>-7</sup> mol L<sup>-1</sup> for K<sup>+</sup>. The recoveries of the anions and cations by this method were in the range 97.8-103%. The method was rapid, sensitive, and simple and was successfully applied to the anal. of rainwater samples. Both electrodes were stable during a 1 wk period of operation with no evidence of chem. or mech. deterioration.

IT 25656-57-9, Polydiphenylamine 25656-57-9D,  
Polydiphenylamine, sodium dodecyl sulfate-modified  
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST  
(Analytical study); USES (Uses)  
(electrode; in simultaneous amperometric detection of  
electroinactive anions and cations in ion chromatog.)

RN 25656-57-9 CAPLUS

CN Benzenamine, N-phenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 122-39-4

CMF C12 H11 N

Ph-NH-Ph

RN 25656-57-9 CAPLUS

CN Benzenamine, N-phenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 122-39-4

CMF C12 H11 N

Ph-NH-Ph

IT Electrodes

(amperometric; in simultaneous detection of electroinactive anions and  
cations in ion chromatog.)

IT Anions

- Cations  
(electroinactive; simultaneous amperometric detection of  
electroinactive anions and cations in ion chromatog.)
- IT Ion exchange chromatography  
Ion exclusion chromatography  
Rainwater  
(simultaneous amperometric detection of electroinactive anions and  
cations in ion exclusion chromatog.-cation exchange chromatog.)
- IT 25656-57-9, Polydiphenylamine 25656-57-9D.  
Polydiphenylamine, sodium dodecyl sulfate-modified  
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST  
(Analytical study); USES (Uses)  
(electrode; in simultaneous amperometric detection of  
electroinactive anions and cations in ion chromatog.)
- IT 151-21-3D, Sodium dodecyl sulfate, modified polydiphenylamine  
RL: DEV (Device component use); MOA (Modifier or additive use); USES  
(Uses)  
(electrode; in simultaneous amperometric detection of  
electroinactive anions and cations in ion chromatog.)
- IT 7440-09-7, Potassium, analysis 7440-23-5, Sodium, analysis 14797-55-8,  
Nitrate, analysis 14798-03-9, Ammonium, analysis 14808-79-8, Sulfate,  
analysis 16887-00-6, Chloride, analysis  
RL: ANT (Analyte); ANST (Analytical study)  
(simultaneous amperometric detection of electroinactive anions and  
cations in ion chromatog.)
- IT 7732-18-5, Water, analysis  
RL: AMX (Analytical matrix); ANST (Analytical study)  
(simultaneous amperometric detection of electroinactive anions and  
cations in ion exclusion chromatog.-cation exchange chromatog.)
- REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 5 OF 19 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2000:601254 CAPLUS

DOCUMENT NUMBER: 133:322251

TITLE: Electrochemical copolymerization of diphenylamine with  
aniline by a pulse potentiostatic method

AUTHOR(S): Rajendran, V.; Gopalan, A.; Vasudevan, T.; Wen,  
Ten-Chin

CORPORATE SOURCE: Department of Industrial Chemistry, Alagappa  
University, Karaikudi, 630 001, India

SOURCE: J. Electrochem. Soc. (2000), 147(8), 3014-3020  
CODEN: JESOAN; ISSN: 0013-4651

PUBLISHER: Electrochemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Electrochem. copolymn. of diphenylamine (DPA) with aniline (ANI) has been  
carried out in aq. sulfuric acid medium using a pulse potentiostic method  
(PPSM). The polymeric films were electrodeposited by employing different  
tunable parameters like pulse width (Pw), pulse no. (Pn) etc., and the  
films deposited by PPSM were studied by cyclic voltammetry to identify

their electrochem. characteristics and growth behavior. A growth equation for copolymer deposition relating the parameters of operation and charge assocd. for film deposition was obtained:  $Q_a \text{ (mC/ms)} = 1.05 \cdot 10^{-7} [\text{DPA}][\text{ANI}]^{-1/2}$ . The surface parameters of these films were evaluated. The copolymer was also characterized through Fourier transform IR (FTIR) and UV (UV)-visible spectroscopic anal. The cyclic voltammograms of the chem. synthesized and electrodeposited copolymer films were obtained.

IT 25656-57-9P, Diphenylamine homopolymer  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(electrochem. copolymn. of diphenylamine with aniline by a pulse potentiostatic method)  
RN 25656-57-9 CAPLUS  
CN Benzenamine, N-phenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 122-39-4  
CMF C12 H11 N

Ph-NH-Ph

IT Conducting polymers  
Cyclic voltammetry  
Electric conductivity  
Polaron  
Polymerization kinetics  
Q-e value in polymerization  
Reactivity ratio in polymerization  
UV and visible spectra  
(electrochem. copolymn. of diphenylamine with aniline by a pulse potentiostatic method)  
IT Polyanilines  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(electrochem. copolymn. of diphenylamine with aniline by a pulse potentiostatic method)  
IT 62-53-3, Aniline, reactions 122-39-4, Diphenylamine, reactions  
RL: PRP (Properties); RCT (Reactant)  
(electrochem. copolymn. of diphenylamine with aniline by a pulse potentiostatic method)  
IT 25233-30-1P, Aniline homopolymer 25656-57-9P, Diphenylamine homopolymer 115606-80-9P, Aniline-diphenylamine copolymer  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(electrochem. copolymn. of diphenylamine with aniline by a pulse potentiostatic method)  
IT 7440-06-4, Platinum, uses 7440-22-4, Silver, uses 7783-90-6, Silver chloride, uses  
RL: DEV (Device component use); USES (Uses)  
(electrode; electrochem. copolymn. of diphenylamine with aniline by a pulse potentiostatic method)

REFERENCE COUNT: 44 THERE ARE 44 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 6 OF 19 CAPLUS COPYRIGHT 2002 ACS  
 ACCESSION NUMBER: 1999:566273 CAPLUS  
 DOCUMENT NUMBER: 131:177418  
 TITLE: Electrochromic display device  
 INVENTOR(S): Chandrasekhar, Prasanna  
 PATENT ASSIGNEE(S): Ashwin-Ushas Corporation, Inc., USA  
 SOURCE: PCT Int. Appl., 94 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9944093	A1	19990902	WO 1999-US3390	19990218
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 5995273	A	19991130	US 1998-30170	19980225
AU 9927699	A1	19990915	AU 1999-27699	19990218
EP 1058861	A1	20001213	EP 1999-908208	19990218
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, PT, IE, FI				
PRIORITY APPLN. INFO.:			US 1998-30170	A2 19980225
			WO 1999-US3390	W 19990218

AB An electrochromic display device comprises an electrochromic conducting polymer layer in contact with a flexible outer layer, a conductive reflective layer disposed between the electrochromic conducting polymer and a substrate layer, a liq. or solid electrolyte in contact with the conductive reflective layer, and a counter electrode. The liq. electrolyte may comprise, for example, a mixt. of sulfuric acid, poly(vinyl sulfate), and poly(anethosulfonate). The solid electrolyte may comprise, for example, a mixt. of sulfuric acid, poly(vinyl sulfate), poly(anethosulfonate), and poly(vinyl alc.). The electrochromic conducting polymer layer may comprise, for example, poly(diphenylamine), poly(4-aminobiphenyl), poly(aniline), poly(3-alkyl thiophene), poly(phenylene), poly(phenylene vinylene), poly(alkylene vinylenes), poly(aminoquinoline), or poly(di-Ph benzidine) and one or more dopants such as poly(styrene sulfonate), poly(anethosulfonate), poly(vinyl sulfate), p-toluene sulfonate, trifluoromethane sulfonate, and poly(vinyl stearate).

IT 25656-57-9, Poly(diphenylamine)

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
(electrochromic display devices with conductive layers of)  
RN 25656-57-9 CAPLUS  
CN Benzenamine, N-phenyl-, homopolymer (9CI) (CA INDEX NAME)  
  
CM 1  
  
CRN 122-39-4  
CMF C12 H11 N

Ph-NH-Ph

IT Electrochromic devices  
Electrochromic imaging devices  
(contg. conductive arom. polymers)  
IT Polyanilines  
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
(electrochromic display devices with conductive layers of)  
IT Polyoxyalkylenes, uses  
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
(electrochromic display devices with electrolytes contg.)  
IT Fluoropolymers, uses  
Polyesters, uses  
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
(electrochromic display devices with substrates of)  
IT 9033-83-4, Poly(phenylene) 25233-30-1, Poly(aniline) 25656-57-9  
, Poly(diphenylamine) 84928-92-7, Poly(3-methylthiophene) 96638-49-2,  
Poly(phenylene vinylene) 102272-00-4 116267-93-7, Poly(4-aminobiphenyl) 117051-73-7, Poly(diphenylbenzidine)  
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
(electrochromic display devices with conductive layers of)  
IT 9003-95-6, Poly(vinyl stearate) 25317-44-6, 3-Hydroxy-4-[2-sulfo-4-(4-sulfophenylazo)phenylazo]-2,7-naphthalenesulfonic acid  
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
(electrochromic display devices with conductive polymer layers contg.)  
IT 104-15-4, uses 7664-93-9, Sulfuric acid, uses 9002-89-5, Poly(vinyl alcohol) 25322-68-3, Poly(ethylene oxide) 26837-42-3, Potassium poly(vinyl sulfate) 37181-39-8, Trifluoromethane sulfonate  
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
(electrochromic display devices with electrolytes contg.)  
IT 9002-86-2, Poly(vinyl chloride) 9002-88-4, Polyethylene 9003-07-0, Polypropylene 9003-42-3, Poly(ethyl methacrylate) 9010-79-1D,



Ethylene-propylene copolymer, fluorinated 9011-14-7, Poly(methyl methacrylate) 24968-79-4, Acrylonitrile-methyl acrylate copolymer  
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(electrochromic display devices with layers of)  
IT 24937-79-9, Poly(vinylidene fluoride) 25038-59-9, Poly(ethylene terephthalate), uses  
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(electrochromic display devices with substrates of)  
REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 7 OF 19 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1999:456293 CAPLUS

DOCUMENT NUMBER: 131:243951

TITLE: Host-guest complexation: a general strategy for electrosynthesis of conductive polymers

AUTHOR(S): Bergamini, J. F.; Lagrost, C.; Ching, K. I. Chane; Jouini, M.; Lacroix, J. C.; Aeiyaich, S.; Lacaze, P. C.

CORPORATE SOURCE: Institut de Topologie et de Dynamique des Systemes.  
Universite Paris 7-Denis Diderot, associe au CNRS,  
Paris, 75005, Fr.

SOURCE: Synth. Met. (1999), 102(1-3), 1538-1539  
CODEN: SYMEDZ; ISSN: 0379-6779

PUBLISHER: Elsevier Science S.A.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Inclusion compds. using hydroxypropyl-.beta.-cyclodextrin as host mol. have been used to electropolymerize some hydrophobic org. compds. in aq. medium. This general strategy makes it possible to grow conducting polymers in aq. medium by anodic oxidn. It is an easy method of obtaining conducting polymers in a very mild manner. Some threaded conducting mol. wire and some water-sol. and processable materials were obtained. Specific conducting polymers which seem to be encapsulated by hydroxypropyl-.beta.-cyclodextrin with some specific inter-chain organization were deposited on solid electrodes.

IT 25656-57-9P, Diphenylamine polymer  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(host-guest complexation for electrosynthesis of conductive polymers)

RN 25656-57-9 CAPLUS

CN Benzenamine, N-phenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 122-39-4

CMF C12 H11 N

Ph-NH-Ph

IT Polymerization  
(electrochem.; host-guest complexation for electrosynthesis of  
conductive polymers)  
IT Conducting polymers  
Inclusion reaction  
(host-guest complexation for electrosynthesis of conductive polymers)  
IT 7585-39-9D, .beta.-Cyclodextrin, hydroxypropyl derivs.  
RL: NUU (Other use, unclassified); USES (Uses)  
(host-guest complexation for electrosynthesis of conductive polymers)  
IT 25656-57-9P, Diphenylamine polymer 79134-59-1P 99611-76-4P  
116267-93-7P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(host-guest complexation for electrosynthesis of conductive polymers)  
REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 8 OF 19 CAPLUS COPYRIGHT 2002 ACS  
ACCESSION NUMBER: 1998:280197 CAPLUS  
DOCUMENT NUMBER: 128:295326  
TITLE: Growth characteristics of poly(diphenylamine)  
deposited by two electrochemical methods - a close  
comparison  
AUTHOR(S): Gopalan, A.; Buvaeswari, R.; Kalaigan, G.  
Paruthimal; Vasudevan, T.  
CORPORATE SOURCE: Department of Industrial Chemistry, Alagappa  
University, Karaikudi, 630 003, India  
SOURCE: Macromol.--New Front., Proc. IUPAC Int. Symp. Adv.  
Polym. Sci. Technol. (1998), Volume 1, 302-305.  
Editor(s): Srinivasan, K. S. V. Allied Publishers  
Ltd.: New Delhi, India.  
CODEN: 65XTAB  
DOCUMENT TYPE: Conference  
LANGUAGE: English  
AB Electrochem. polymn. of diphenylamine was carried out in aq. sulfuric acid  
medium using platinum as working electrode by cyclic voltammetry  
and pulse potentiostatic methods. The expts. were performed under  
identical conditions using various parameters for both the methods and the  
growth behavior of poly(diphenylamine) deposition was followed. The  
results showed an enhanced mode of growth with better electrochem.  
characteristics under given exptl. parameters in pulse potentiostatic  
method.  
IT 25656-57-9P, Poly(diphenylamine)  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(growth characteristics of poly(diphenylamine) deposited by cyclic  
voltammetry and pulse potentiostatic methods)  
RN 25656-57-9 CAPLUS  
CN Benzenamine, N-phenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 122-39-4

CMF C12 H11 N

Ph-NH-Ph

IT Electrochemical polymerization  
(growth characteristics of poly(diphenylamine) deposited by cyclic voltammetry and pulse potentiostatic methods)

IT 25656-57-9P, Poly(diphenylamine)  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(growth characteristics of poly(diphenylamine) deposited by cyclic voltammetry and pulse potentiostatic methods)

L4 ANSWER 9 OF 19 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1998:258992 CAPLUS

DOCUMENT NUMBER: 128:322160

TITLE: Characterization of polydiphenylamine  
electrochemically synthesized by spectroscopic and thermal techniques

AUTHOR(S): De Santana, Henrique; Do Rosario Matos, Jivaldo;  
Temperini, Marcia Laudelina Arruda

CORPORATE SOURCE: Departamento de Quimica Fundamental, Instituto de  
Quimica, Universidade de Sao Paulo, Sao Paulo, CEP  
05599-970, Brazil

SOURCE: Polym. J. (Tokyo) (1998), 30(4), 315-321  
CODEN: POLJB8; ISSN: 0032-3896

PUBLISHER: Society of Polymer Science, Japan

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Two kinds of films, named A and B, of polydiphenylamine electrochem. synthesized were characterized by ex situ resonance Raman (RR), FT-IR and UV-Vis-NIR Reflectance spectroscopies. The ex situ RR spectra of the films showed differences that were rationalized assuming the predominance of the diphenosemiquinone aminoimine structure in the film A, while in the film B the diphenoquinone diimine segments were predominant. The variation of the nature of the film adsorbed on the electrode with the applied potential was monitored by the in situ RR technique. The bands characteristics of the diphenosemiquinone aminoimine moiety are dependent on the laser power employed, being converted to diphenoquinone diimine and di-Ph diamine segments. This result was confirmed by FT-IR spectra of the film A after heating. The thermal behavior of the films was monitored by thermogravimetry, deriv. thermogravimetry, and differential scanning calorimetry.

IT 25656-57-9, Polydiphenylamine  
RL: PEP (Physical, engineering or chemical process); PRP (Properties);  
PROC (Process)  
(characterization of electrochem. synthesized polydiphenylamine by spectroscopic and thermal techniques)

RN 25656-57-9 CAPLUS

CN Benzenamine, N-phenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 122-39-4

CMF C12 H11 N

Ph-NH-Ph

- IT IR spectra  
(Fourier-transform; characterization of electrochem. synthesized polydiphenylamine by spectroscopic and thermal techniques)
- IT Differential scanning calorimetry  
Raman spectra  
Thermogravimetric analysis  
UV and visible spectra  
(characterization of electrochem. synthesized polydiphenylamine by spectroscopic and thermal techniques)
- IT Polyamines (polymeric)  
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)  
(characterization of electrochem. synthesized polydiphenylamine by spectroscopic and thermal techniques)
- IT 25656-57-9, Polydiphenylamine  
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)  
(characterization of electrochem. synthesized polydiphenylamine by spectroscopic and thermal techniques)

L4 ANSWER 10 OF 19 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1997:131466 CAPLUS

DOCUMENT NUMBER: 126:158044

TITLE: The spectroscopic characterization of polydiphenylamine and one of its oligomeric fractions

AUTHOR(S): De Santana, H.; Temperini, M.L.A.

CORPORATE SOURCE: Departamento de Quimica Fundamental, Instituto de Quimica, Universidade de Sao Paulo, C.P. 26,077, Sao Paulo, 05599-970, Brazil

SOURCE: J. Braz. Chem. Soc. (1996), 7(6), 485-490

CODEN: JOCSET; ISSN: 0103-5053

PUBLISHER: Sociedade Brasileira de Quimica

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Polydiphenylamine, electrochem. synthesized by a potentiodynamic method, was characterized by UV-visible absorption, Raman, and IR spectroscopies. Depending on the potential applied, 2 types of adsorbed polymeric films were obtained on the electrode. A sol. oligomeric fraction formed in the electrolyte soln. was also characterized. The Raman spectra of the polymeric film formed at more pos. final potential and of the oligomeric fraction show the predominance of the diphenosemiquinoneimine

structure. These results, along with the UV-visible and cond. data, show that the band gap energy of the conducting polymer is dependent on the diphenosemiquinoneimine structure present in the polymer backbone. The IR spectra show some features that indicate interchain H-bonding.

IT 25656-57-9, Diphenylamine polymer

RL: PRP (Properties)

(oxidized and reduced electropolymd. forms; spectroscopic characterization of polydiphenylamine and one of its oligomeric fractions)

RN 25656-57-9 CAPLUS

CN Benzenamine, N-phenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 122-39-4

CMF C12 H11 N

Ph-NH-Ph

IT IR spectra

Raman spectra

UV and visible spectra

(spectroscopic characterization of polydiphenylamine and one of its oligomeric fractions)

IT 25656-57-9, Diphenylamine polymer

RL: PRP (Properties)

(oxidized and reduced electropolymd. forms; spectroscopic characterization of polydiphenylamine and one of its oligomeric fractions)

L4 ANSWER 11 OF 19 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1994:282936 CAPLUS

DOCUMENT NUMBER: 120:282936

TITLE: Study on polymerization and structure of polydiphenylamine

AUTHOR(S): Jin, Wen; Song, Fayi; Dong, Shaojun

CORPORATE SOURCE: Changchun Inst. Appl. Chem., Chin. Acad. Sci., Changchun, 130022, Peop. Rep. China

SOURCE: Chin. J. Chem. (1994), 12(2), 138-47

CODEN: CJOCEV

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The electrochem. oxidn. of diphenylamine in acetonitrile produces an adherent uniform polymer film which exhibits multiple color variation (yellow-green-blue) in a wide range of potential scan. The polymn. mechanism and the structure of the polymer were studied by cyclic voltammetry, FTIR and in situ ESR. The results indicate that the electrochem. polymn. of diphenylamine belongs to a cationic radical polymn. process. During electrolysis, only oligomers were initially

produced, then polymer film was formed on the electrode surface.  
The electropolymer. performs via the 4,4' C-C phenyl-Ph coupling mechanism.

IT 25656-57-9, Polydiphenylamine  
RL: RCT (Reactant)  
(electroprepn. and electrochem. redox reactions of, in acetonitrile)  
RN 25656-57-9 CAPLUS  
CN Benzenamine, N-phenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 122-39-4  
CMF C12 H11 N

Ph-NH-Ph

IT Coupling reaction  
(in electrochem. polymn. of diphenylamine in acetonitrile)  
IT Oxidation, electrochemical  
(of diphenylamine in acetonitrile, polymer from)  
IT Electron spin resonance  
(of polydiphenylamine)  
IT Bond formation  
(carbon-carbon, in electrochem. polymn. of diphenylamine)  
IT Polymerization  
(electrochem., of diphenylamine in acetonitrile, with formation of  
intermediate radical cations, polymer from)  
IT Redox reaction  
(electrochem., of polydiphenylamine in acetonitrile)  
IT 75-05-8, Acetonitrile, uses  
RL: USES (Uses)  
(electrochem. polymn. of diphenylamine and electrochem. redox reactions  
of polydiphenylamine in soln. of)  
IT 122-39-4, Diphenylamine, reactions  
RL: RCT (Reactant)  
(electrochem. polymn. of, in acetonitrile, polymer from)  
IT 7791-03-9, Lithium perchlorate  
RL: PRP (Properties)  
(electrochem. prepn. and electrochem. redox reactions of  
polydiphenylamine in acetonitrile contg.)  
IT 7732-18-5, Water, uses  
RL: PRP (Properties)  
(electrochem. prepn. and electrochem. redox reactions of  
polydiphenylamine in acetonitrile contg. different amts. of)  
IT 25656-57-9, Polydiphenylamine  
RL: RCT (Reactant)  
(electroprepn. and electrochem. redox reactions of, in acetonitrile)

DOCUMENT NUMBER: 118:81869  
TITLE: Electrochemical synthesis and characterization of poly(diphenylamine)  
AUTHOR(S): Dong, Shaojun; Song, Fayi; Li, Zhuang  
CORPORATE SOURCE: Changchun Inst. Appl. Chem., Chin. Acad. Sci., Changchun, 130022, Peop. Rep. China  
SOURCE: Chin. J. Chem. (1992), 10(1), 10-16  
CODEN: CJOCEV  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
AB Electrochem. oxidn. of diphenylamine in acetonitrile produced an adhesive conducting polydiphenylamine (I) film on the electrode, which exhibited multiple color variations in a wide range of potential. I was characterized by cyclic voltammetry, FTIR, and ESR. The electropolymer. proceeded via the 4,4' C-C Ph-Ph coupling mechanism. I can be reversibly doped and dedoped either chem. or electrochem. Paramagnetic species-polarons in I are supposed to be the current carriers.  
IT 25656-57-9P, Poly(diphenylamine)  
RL: SPN (Synthetic preparation); PREP (Preparation) (prepn., characterization and elec. cond. of)  
RN 25656-57-9 CAPLUS  
CN Benzenamine, N-phenyl-, homopolymer (9CI) (CA INDEX NAME)  
  
CM 1  
  
CRN 122-39-4  
CMF C12 H11 N

Ph-NH-Ph

IT Polaron  
(in poly(diphenylamine))  
IT Electric conductivity and conduction  
(of poly(diphenylamine))  
IT Polymerization  
(electrochem., of diphenylamine, mechanism of)  
IT 25656-57-9P, Poly(diphenylamine)  
RL: SPN (Synthetic preparation); PREP (Preparation) (prepn., characterization and elec. cond. of)  
  
L4 ANSWER 13 OF 19 CAPLUS COPYRIGHT 2002 ACS  
ACCESSION NUMBER: 1991:417482 CAPLUS  
DOCUMENT NUMBER: 115:17482  
TITLE: Electrosyntheses, spectroelectrochemical, electrochemical, and chronovoltabsorptometric properties of family of poly(aromatic amines). novel processible conducting polymers. I. Poly(benzidines)  
AUTHOR(S): Chandrasekhar, P.; Gumbs, Ronald Winston  
CORPORATE SOURCE: Gumbs Assoc., Inc., East Brunswick, NJ, 08816, USA

SOURCE: J. Electrochem. Soc. (1991), 138(5), 1337-46  
CODEN: JESQAN; ISSN: 0013-4651

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Direct electropolymerization of a family of aromatic amines yields novel, stable conducting polymers with good conductivity and ca. 8 wt./wt. percent (0.3M) or higher solubility in doped and undoped states in organic media. The polymers are electroactive in solution and recastable as films with spectroelectrochemical and electrochemical activity identical to virgin films. Detailed properties are reported in the present communication for two of the polymers, poly(N,N'-diphenyl benzidine) and poly(benzidine), including solution electrochemical, film properties of virgin vs. recast films, spectroelectrochemical properties which show broad-band absorption across the visible spectral region and clear development of bipolaron bands, and charging capacities. Chronocoulometry, chronoamperometry, and chronopotentiometry (optical transmission at specific wavelength as function of time and applied potential) show reversible behavior for films of poly(N,N'-diphenyl benzidine) over several thousand cycles for pulses as short as 0.1 s, but polymer degradation on extended cycling for poly(benzidine). Polymer structural elucidation indicates a combination of N- and para-linkages for poly(N,N'-diphenyl benzidine).

IT 25656-57-9P, Poly(diphenylamine)

RL: PREP (Preparation)

(electrochemical and spectral properties and electrochemical preparation of)

RN 25656-57-9 CAPLUS

CN Benzenamine, N-phenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 122-39-4

CMF C12 H11 N

Ph-NH-Ph

IT Polymers, properties

RL: PRP (Properties)

(conducting, based on benzidine derivatives, electrochemical and spectral properties of)

IT Electric conductivity and conduction

Ultraviolet and visible spectra

(of polymers based on benzidine derivatives.)

IT Solubility

(of polymers based on benzidine derivatives in organic solvent)

IT Solvent effect

(on solubility and redox reaction of polymers based on benzidine derivatives.)

IT Amines, reactions

RL: RCT (Reactant)

(aryl, electrochemical polymerization of)

IT Polaron



- (di-, in polymers based benzidine derivs.)
- IT Polymerization  
(electrochem., of benzidine derivs., conducting polymer from)
- IT Redox reaction  
(electrochem., of polymers based on benzidine derivs.)
- IT 25168-37-0P 102771-69-7P 134589-20-1P 134589-21-2P  
RL: PREP (Preparation)  
(attempted electrochem. prepn. of)
- IT 14874-70-5, Tetrafluoroborate 16722-51-3, properties  
RL: PRP (Properties)  
(elec. cond. of polymers based on benzidine derivs. prepd. in soln. contg.)
- IT 25656-57-9P, Poly(diphenylamine) 26997-10-4P 108443-85-2P,  
Poly(N,N'-diphenyl benzidine) 116267-93-7P, Poly(4-aminobiphenyl)  
RL: PREP (Preparation)  
(electrochem. and spectral properties and electrochem. prepn. of)
- IT 429-06-1 733-44-8 2001-45-8, Tetraphenylphosphonium chloride  
2567-83-1 7791-03-9  
RL: PRP (Properties)  
(electrochem. polymn. of benzidine derivs. in org. solvent contg.)
- IT 75-09-2, Dichloromethane, uses and miscellaneous  
RL: USES (Uses)  
(electrochem. polymn. of benzidine in soln. of)
- IT 7440-06-4, Platinum, uses and miscellaneous 7440-57-5, Gold, uses and  
miscellaneous  
RL: USES (Uses)  
(electrode, benzidine deriv. electrochem. polymn. on)
- IT 50926-11-9, Indium tin oxide  
RL: PRP (Properties)  
(electrode, benzidine deriv. electrochem. polymn. on)
- IT 74-31-7, N,N'-Diphenyl-1,4-phenylene diamine 106-50-3, 1,4-Phenylene  
diamine, reactions 366-29-0, N,N,N',N'-Tetramethyl benzidine  
54827-17-7, 3,3',5,5'-Tetramethyl benzidine  
RL: RCT (Reactant)  
(polymn. of, electrochem., attempted)
- IT 92-67-1, 4-Amino biphenyl 92-87-5, Benzidine 122-39-4, Diphenyl amine,  
reactions 531-91-9, N,N'-Diphenyl benzidine  
RL: RCT (Reactant)  
(polymn. of, electrochem., conducting polymer from)
- IT 75-05-8, Acetonitrile, properties 108-32-7  
RL: PRP (Properties)  
(soly. of polymers and benzidine derivs. in)
- IT 68-12-2, properties 75-09-2, Dichloromethane, properties 872-50-4,  
1-Methyl-2-pyrrolidinone, properties  
RL: PRP (Properties)  
(soly. of polymers based on benzidine derivs. in soln. of)

L4 ANSWER 14 OF 19 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1990:86716 CAPLUS

DOCUMENT NUMBER: 112:86716

TITLE: Formation of poly(4-phenylaniline) by

electropolymerization of 4-aminobiphenyl or diphenylamine

AUTHOR(S): Guay, Jean; Dao, Le H.

CORPORATE SOURCE: Lab. Rech. Mater. Avances, Inst. Natl. Rech. Sci.,  
Varennnes, PQ, JOL 2P0, Can.

SOURCE: J. Electroanal. Chem. Interfacial Electrochem. (1989),  
274(1-2), 135-42  
CODEN: JEIEBC; ISSN: 0022-0728

DOCUMENT TYPE: Journal

LANGUAGE: English

AB 4-Aminobiphenyl and diphenylamine were electropolymd. in acidic and org.  
media to produce poly(4-aminobiphenyl) and poly(diphenylamine), resp. The  
resulting polymers present similar cyclic voltammograms and FTIR spectra.  
4-Aminobiphenyl undergoes the usual C-N head-to-tail coupling while  
diphenylamine follows a 4,4' C-C Ph-Ph coupling.

IT 25656-57-9, Poly(diphenylamine)  
RL: PRP (Properties)  
(electrochem. formation and redox reactions and IR spectra of,  
deprotonation effect on)

RN 25656-57-9 CAPLUS

CN Benzenamine, N-phenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 122-39-4

CMF C12 H11 N

Ph-NH-Ph

IT Oxidation, electrochemical  
(of aminobiphenyl or diphenylamine in acetonitrile on platinum, polymn.  
in)

IT Infrared spectra  
(of polyaminobiphenyl or polydiphenylamine and their monomers)

IT Protonation and Proton transfer reaction  
(deprotonation, of polyaminobiphenyl or polydiphenylamine, redox  
reactions and stability in relation to)

IT Polymerization  
(electrochem., of aminobiphenyl or diphenylamine on platinum in  
acetonitrile)

IT Redox reaction  
(electrochem., of polyaminobiphenyl or polydiphenylamine, deprotonation  
effect on)

IT Electric potential  
(redox, of polyaminobiphenyl or polydiphenylamine)

IT 75-05-8, Acetonitrile, uses and miscellaneous  
RL: USES (Uses)  
(aminobiphenyl and diphenylamine electrochem. polymn. in, with lithium  
perchlorate)

- IT 25656-57-9, Poly(diphenylamine) 116267-93-7,  
Poly(4-aminobiphenyl)  
RL: PRP (Properties)  
(electrochem. formation and redox reactions and IR spectra of,  
deprotonation effect on)
- IT 7791-03-9, Lithium perchlorate  
RL: PRP (Properties)  
(electrochem. polymn. of aminobiphenyl and diphenylamine in  
acetonitrile contg.)
- IT 7647-01-0, Hydrochloric acid, uses and miscellaneous  
RL: USES (Uses)  
(electrochem. redox reactions of polyaminobiphenyl or polydiphenylamine  
in soln. contg.)
- IT 7440-06-4, Platinum, uses and miscellaneous  
RL: USES (Uses)  
(electrode, aminobiphenyl or diphenylamine polymn. on)
- IT 92-67-1, 4-Aminobiphenyl 122-39-4, Diphenylamine, reactions  
RL: RCT (Reactant)  
(polymn. of, electrochem., conducting polymer from)
- IT 12408-02-5  
RL: PRP (Properties)  
(protonation and Proton transfer reaction, deprotonation, of  
polyaminobiphenyl or polydiphenylamine, redox reactions and stability  
in relation to)

L4 ANSWER 15 OF 19 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1987:580168 CAPLUS  
DOCUMENT NUMBER: 107:180168  
TITLE: Photoelectrochemical device  
INVENTOR(S): Sugimoto, Hiroyuki; Matsuda, Shinpei; Fujita, Kazunori  
PATENT ASSIGNEE(S): Hitachi, Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 62105378	A2	19870515	JP 1985-243998	19851101

AB The device of a counterelectrode, an electrolyte, and an electrode  
covered with a polymer of an aniline type compd. I (R, R1, R2, R3, R4 = H,  
Ph, alkyl, alkoxy, NH2) produces elec. current on irradiation with light. A  
Pt electrode covered with polyaniline, a Cu counterelectrode,  
and a 0.2 M HBF4 soln. contg. 0.01 M CuCl were used to prep. a photoelec.  
cell, which produced 50  $\mu$ A/cm<sup>2</sup> on irradiation by Xe-light.

IT 25656-57-9, Poly(diphenylamine)  
RL: USES (Uses)  
(electrodes from platinum coated with)

RN 25656-57-9 CAPLUS

CN Benzenamine, N-phenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 122-39-4

CMF C12 H11 N

Ph-NH-Ph

IT Photoelectric devices, solar  
(photoelectrochem., polyaniline with fluoboric acid contg. copper chloride)

IT 25233-30-1, Polyaniline 25656-57-9, Poly(diphenylamine)  
25668-03-5, Poly(m-phenylenediamine) 27082-18-4, Poly(N-methylaniline)  
97917-08-3, Poly(o-toluidine) 110777-52-1, Poly(m-ethoxyaniline)

RL: USES (Uses)

(electrodes from platinum coated with)

L4 ANSWER 16 OF 19 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1987:462039 CAPLUS

DOCUMENT NUMBER: 107:62039

TITLE: Secondary polymer batteries

INVENTOR(S): Shinozaki, Kenji; Nojiri, Akio; Tomizuka, Yukio

PATENT ASSIGNEE(S): Furukawa Electric Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 3 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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	JP 62020253	A2	19870128	JP 1985-158369	19850719
AB	Durable batteries with a high energy d. and coulomb efficiency use poly(diphenylamine) (I) as electrode materials. I electrochem. deposited on a Pt electrode from 0.1 Ph <sub>2</sub> NH + 1.mu. HClO <sub>4</sub> soln. was washed, dried, and used as a cathode for a battery having a Li anode and a 1.mu. LiClO <sub>4</sub> /propylene carbonate electrolyte. The battery has a capacity of 0.12 W-h/kg; the coulomb efficiency at the 100th charge-discharge cycle was >95%, whereas the efficiency of a battery using a polyacetylene cathode dropped to <40% after 20 cycles.				
IT	25656-57-9, Diphenylamine, polymer RL: DEV (Device component use); USES (Uses) (cathodes, for secondary batteries)				
RN	25656-57-9 CAPLUS				
CN	Benzenamine, N-phenyl-, homopolymer (9CI) (CA INDEX NAME)				

CM 1

CRN 122-39-4  
CMF C12 H11 N

Ph-NH-Ph

IT Cathodes  
(battery, polydiphenylamine)  
IT 25656-57-9, Diphenylamine, polymer  
RL: DEV (Device component use): USES (Uses)  
(cathodes, for secondary batteries)

L4 ANSWER 17 OF 19 CAPLUS COPYRIGHT 2002 ACS  
ACCESSION NUMBER: 1987:426069 CAPLUS  
DOCUMENT NUMBER: 107:26069  
TITLE: Polyaniline-type electrodes  
INVENTOR(S): Naito, Kazumi; Ikezaki, Takashi  
PATENT ASSIGNEE(S): Showa Denko K. K., Japan; Hitachi, Ltd.  
SOURCE: Jpn. Kokai Tokkyo Koho, 3 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 61281463	A2	19861211	JP 1985-122770	19850607
JP 05058228	B4	19930826		

AB The title electrodes contain poly(diphenylamine) as the binder.  
A 0.3M aq. (NH<sub>4</sub>)<sub>2</sub>S<sub>2</sub>O<sub>8</sub> was added dropwise to aq. soln. of 0.6M PhNH<sub>2</sub> and 3M HBF<sub>4</sub> and the mixt. was reacted at 40.degree. for 2 h to give the HBF<sub>4</sub> salt of polyaniline. This polymer 5 g was mixed with 2 g poly(diphenylamine) (m.p. 130.degree., prepd. by polymn. of Ph<sub>2</sub>NH in C<sub>6</sub>H<sub>6</sub> with FeCl<sub>3</sub> catalyst), fused at 140.degree., and cooled under pressure to give a film with a bending strength of 1115 kg/cm<sup>2</sup>. A battery using this film as the cathode, a Li anode, and 2M LiBF<sub>4</sub>/propylene carbonate electrolyte had a charge-discharge cycle life of 621 cycles and an energy d. of .apprx.173 W-h/kg electrode vs. the resp. values of 526 cycles and 127 W-h/kg for a battery using a pressed polyaniline-carbon black cathode which had a bending strength of 45 kg/cm<sup>2</sup>.

IT 25656-57-9, Poly(diphenylamine)  
RL: USES (Uses)  
(binder, polyaniline electrodes contg., for secondary batteries)

RN 25656-57-9 CAPLUS

CN Benzenamine, N-phenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 122-39-4

CMF C12 H11 N

Ph-NH-Ph

IT Binding materials  
(poly(diphenylamine), for polyaniline electrodes in secondary batteries)

IT Electrodes  
(battery, polyanilines, poly(diphenylamine) binder for)

IT 25656-57-9, Poly(diphenylamine)  
RL: USES (Uses)  
(binder, polyaniline electrodes contg., for secondary batteries)

IT 97917-08-3 99742-70-8  
RL: USES (Uses)  
(cathodes, contg. polydiphenylamine binder, for secondary batteries)

IT 25233-30-1, Polyaniline  
RL: USES (Uses)  
(cathodes, contg. polydiphenylamine binders, for secondary batteries)

L4 ANSWER 18 OF 19 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1987:184850 CAPLUS

DOCUMENT NUMBER: 106:184850

TITLE: Electrochemical synthesis and study of polydiphenylamine

AUTHOR(S): Hayat, Umar; Bartlett, Philip N.; Dodd, George H.; Barker, John

CORPORATE SOURCE: Dep. Chem., Univ. Warwick, Coventry, CV4 7AL, UK

SOURCE: J. Electroanal. Chem. Interfacial Electrochem. (1987), 220(2), 287-94

CODEN: JEIEBC; ISSN: 0022-0728

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The electrochem. oxidn. of diphenylamine in MeCN produces an adherent conducting polymer film at the electrode. Cond. measurements on pressed pellets of this polymer give a room temp. cond. of 10 S cm<sup>-1</sup>. The polymer can be cycled between 25 and 200.degree. without deterioration in the cond. Preliminary SEM energy-dispersive x-ray anal. studies suggest that there is 1 BF<sub>4</sub> counter ion for every 4 monomer units in the oxidized polymer film.

IT 25656-57-9, Polydiphenylamine  
RL: PRP (Properties)  
(electrochem. prepn. and elec. cond. of tetrafluoroborate-doped)

RN 25656-57-9 CAPLUS  
CN Benzenamine, N-phenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 122-39-4  
CMF C12 H11 N

Ph-NH-Ph

- IT Electric conductivity and conduction  
Oxidation, electrochemical  
(of polydiphenylamine doped with tetrafluoroborate)
- IT Dimerization  
(electrochem., oxidative, of diphenylamine)
- IT Polymerization  
(electrochem., oxidative, of diphenylamine on platinum in acetonitrile  
contg. tetraethylammonium tetrafluoroborate)
- IT 429-06-1, Tetraethylammonium tetrafluoroborate(1-)  
RL: PRP (Properties)  
(diphenylamine electrochem. polymn. in acetonitrile contg.)
- IT 25656-57-9, Polydiphenylamine  
RL: PRP (Properties)  
(electrochem. prepn. and elec. cond. of tetrafluoroborate-doped)
- IT 7440-06-4, Platinum, uses and miscellaneous  
RL: USES (Uses)  
(electrode, polymn. of diphenylamine on, in acetonitrile  
contg. tetraethylammonium tetrafluoroborate)
- IT 14874-70-5P, Tetrafluoroborate  
RL: PREP (Preparation)  
(polydiphenylamine doped with, electrochem. prepn. and elec. cond. of)
- IT 122-39-4, Diphenylamine, reactions  
RL: RCT (Reactant)  
(polymn. of, electrochem. oxidative, in acetonitrile contg.  
tetraethylammonium tetrafluoroborate)

L4 ANSWER 19 OF 19 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1987:70305 CAPLUS  
DOCUMENT NUMBER: 106:70305  
TITLE: Secondary battery and its electrodes  
INVENTOR(S): Hirai, Ryuichi; Maruyama, Isao; Sakon, Yoshihiro  
PATENT ASSIGNEE(S): Maruzen Oil Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION: